

WHAT IS CLAIMED IS:

1. A method for increasing the chrome to iron ratio of a chromite product selected from the group consisting of ore and ore concentrate comprising the steps of
 - a. mixing the chromite product with at least one salt so as to produce a mixture, whereby the concentration of salt in the mixture is selected to induce the selective chlorination of iron; and
 - b. chlorinating the mixture in the presence of CO at a temperature sufficient to induce the formation of a thin film of a melt around the chromite product and at a temperature able to promote the selective chlorination of iron, whereby an iron impoverished chromite product is yielded having an increased chromite to iron ratio as compared to that of the chromite product.
2. A method as recited in claim 1, wherein said temperature is between about 157° and about 750°C.
3. A method as recited in claim 1, wherein the at least one salt is selected from the group consisting of NaCl, KCl and MgCl₂ and a combination thereof.
4. A method as recited in any one of claims 1 and 2, wherein the salt is NaCl and forms about 5% to about 10% w/w of the mixture.
5. A method as recited in any one of claims 1 and 2, wherein the salt is NaCl and forms about 5% w/w of the mixture.
6. A method as recited in any one of claims 1 to 3, wherein the temperature is between about 250° and about 720°C.
7. A method as recited in any one of claims 1 to 4, wherein the temperature is between about 670° and about 720°C.
8. A method as recited in any one of claims 1 to 7, wherein the Cl₂/CO ratio is between about 0.5 and about 1.5.
9. A method as recited in any one of claims 1 to 8, wherein the mixture is dried before chlorination.

10. A method as recited in any one of claims 1 to 9, wherein N_2 is used as a carrier gas during chlorination.
11. A method as recited in any one of claims 1 to 10, wherein the duration of the chlorination is about 30 minutes to about 2 hours.
12. A method as recited in any one of claims 1 to 10, wherein the duration of the chlorination is about 2 hours.
13. A method for increasing the chrome to iron ratio of a chromite product selected from the group consisting of ore and ore concentrate comprising the steps of
 - a. mixing the chromite product with NaCl so that a mixture is produced having about 5% to about 10% NaCl w/w; and
 - b. chlorinating the mixture in the presence of CO at a temperature sufficient to induce the formation of a thin film of a melt around the chromite product and at a temperature able to promote the selective chlorination of iron, whereby an iron impoverished chromite product is yielded having an increased chromite to iron ratio as compared to that of the chromite product.
14. A method as recited in claim 13, wherein said temperature is between about 157° and about 750°C .
15. A method as recited in any one of claims 13 and 14, wherein the salt is NaCl and forms about 5% w/w of the mixture.
16. A method as recited in any one of claims 13 to 15, wherein the temperature is between about 670° and about 720°C .
17. A method as recited in any one of claims 13 to 16, wherein the Cl_2/CO ratio is about 0.5 and about 1.5.
18. A method as recited in any one of claims 13 to 17, wherein the mixture is dried before chlorination.
19. A method as recited in any one of claims 13 to 18, wherein N_2 is used as a carrier gas during chlorination.
20. A method as recited in any one of claims 13 to 19, wherein the duration of the chlorination is about 30 minutes to about 2 hours.

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21. A method as recited in any one of claims 13 to 20, wherein the duration of the chlorination is about 2 hours.

22. A method for extracting iron from a chromite product selected from the group consisting of ore and ore concentrate comprising the steps of

- a. mixing the chromite product with at least one salt; and
 - b. chlorinating the mixture in the presence of CO at a temperature sufficient to induce the formation of a thin film of a melt around the chromite product so as to promote the chlorination of iron,
- whereby an iron impoverished chromite product is yielded.